

Ifw/2817

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

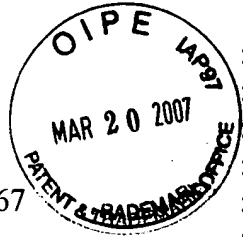
In re Application of

Akihiro SAWADA

Application No.: 10/559,867

Filed: December 07, 2005

For: PLL FREQUENCY SYNTHESIZER



Customer Number: 53080

Confirmation Number: 7460

Group Art Unit: 2817

Examiner: Not yet assigned

**LETTER TO SUBMIT FRONT PAGE OF INTERNATIONAL PUBLICATION AND
ENGLISH-TRANSLATED INTERNATIONAL SEARCH REPORT**

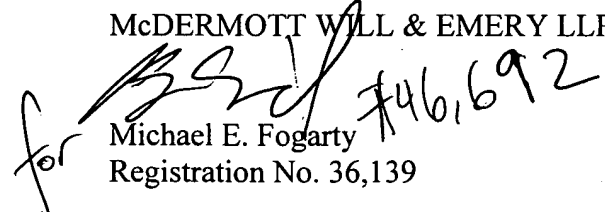
Mail Stop OIPE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached are copies of the front page of the International Publication and the English translation of the International Search Report received from the International Bureau of WIPO for the corresponding PCT application of the above-referenced application. It is requested that the U.S. Patent and Trademark Office records be updated to include these documents. Thank you.

Respectfully submitted,

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as our correspondence address.**

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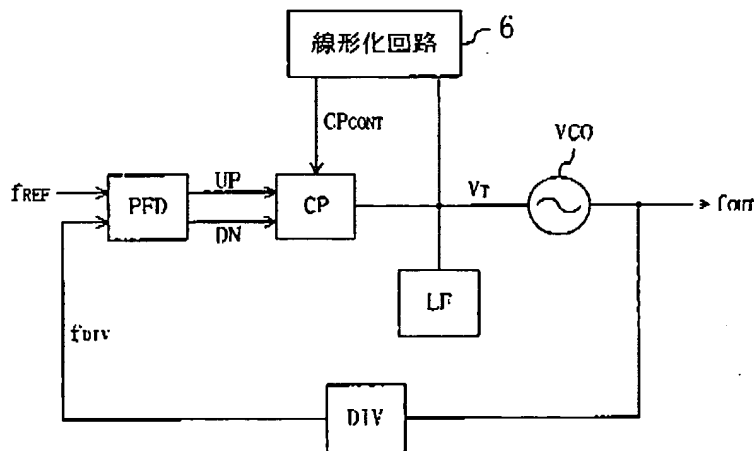
(51) 国際特許分類: H03L 7/093
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(22) 国際出願日: 2005年5月12日 (12.05.2005)
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特願2004-247794 2004年8月27日 (27.08.2004) JP
(71) 出願人(米国を除く全ての指定国について): 松下電器産業株式会社 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) [JP/JP]; 〒5718501 大阪府門真市大字門真1006番地 Osaka (JP).
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(81) 指定国(表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
(84) 指定国(表示のない限り、全ての種類の広域保護が可能): ARIPO (BW, CH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), ユーラシア (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), ヨーロッパ (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,

[続葉有]

(54) Title: PLL FREQUENCY SYNTHESIZER

(54) 発明の名称: PLL周波数シンセサイザ



6 LINEARIZATION CIRCUIT

(57) Abstract: In a PLL frequency synthesizer, a linearization circuit (6) is provided which receives an oscillation frequency control signal (VT) from a loop filter (LF). The linearization circuit (6) outputs, in accordance with the potential level of the oscillation frequency control signal (VT), a charge pump current control signal (CPCONT) that exhibits the higher value, the higher the potential level. The charge pump (CP) receives the charge pump current control signal (CPCONT) to cause a current in accordance with the value of the received charge pump current control signal (CPCONT) to flow in or flow out. Thus, a simple circuit arrangement can be used to adjust and maintain constant the loop gain characteristic of the PLL frequency synthesizer. Accordingly, even when a variable capacitance element included in the a voltage controlled oscillator has a nonlinear characteristic for the potential of the input oscillation frequency control signal, the loop gain of the PLL frequency synthesizer having this voltage controlled oscillator can be adjusted and maintained constant.

(57) 要約: PLL周波数シンセサイザにおいて、ループフィルタLFからの発振周波数制御信号VTを入力する線形化回路6が設けられる。この線形化回路6は、発振周波数制御信号VTの電位レベルに応じて、

[続葉有]

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IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), — 補正書
OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG).

添付公開書類:
— 国際調査報告書

2文字コード及び他の略語については、定期発行される
各PCTガゼットの巻頭に掲載されている「コードと略語
のガイダンスノート」を参照。

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2005/008708

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl.⁷ H03L7/093

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl.⁷ H03L7/06-7/23Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2005
Kokai Jitsuyo Shinan Koho 1971-2005 Toroku Jitsuyo Shinan Koho 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 11-251902 A (NEC Yamagata, Ltd.), 17 September, 1999 (17.09.99), Par. Nos. [0035] to [0045]; Figs. 5 to 9 (Family: none)	1-3, 11
X	JP 2000-013220 A (Oki Electric Industry Co., Ltd.), 14 January, 2000 (14.01.00), Par. Nos. [0026] to [0028]; Fig. 8 (Family: none)	1, 2

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
08 July, 2005 (08.07.05)Date of mailing of the international search report
26 July, 2005 (26.07.05)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

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Form PCT/ISA/210 (second sheet) (January 2004)